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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TC 2000 MAIL ROOM

In re Application of

ARMIN WAGNER ET AL.

Serial No.: 09/856,851

Filed: May 25, 2001

For: COMMUTATION DEVICE, ESPECIALLY  
A COMMUTATOR, AND METHOD FOR  
PRODUCING SUCH A DEVICE

PATENT

Group Art Unit: 2834

Examiner:

**SUBMISSION OF ENGLISH PRELIMINARY EXAMINATION REPORT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Submitted herewith is an English language Preliminary Examination Report for the  
above-identified application.

Respectfully submitted,

Mark S. Bicks

Reg. No. 28,770

Roylance, Abrams, Berdo & Goodman, L.L.P.  
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Dated: Nov. 8, 2001

## PATENT COOPERATION TREATY

**PCT**  
**NOTIFICATION OF TRANSMITTAL**  
**OF COPIES OF TRANSLATION**  
**OF THE INTERNATIONAL PRELIMINARY**  
**EXAMINATION REPORT**

(PCT Rule 72.2)

From the INTERNATIONAL BUREAU

To:

Permin:

Eng.:

13. JULI 2001

Patwo.

BARTELS &amp; PARTNER

Lange Strasse 51

D-70174 Stuttgart

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NOV 13 2001

MAIL ROOM

Date of mailing (day/month/year) 02 July 2001 (02.07.01)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference 10dww/128533	
International application No. PCT/EP99/09061	International filing date (day/month/year) 24 November 1999 (24.11.99)
Applicant KIRKWOOD INDUSTRIES GMBH et al	

**1. Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation made by the International Bureau of the international preliminary examination report established by the International Preliminary Examining Authority.

**2. Transmittal of the copy of the translation to the elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following elected Offices requiring such translation:

JP,US

The following elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

EP,SI

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report.

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. (41-22) 740.14.35	Authorized officer  Juan Cruz  Telephone No. (41-22) 338.83.38
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Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 10dwk/128533	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP99/09061	International filing date (day/month/year) 24 November 1999 (24.11.99)	Priority date (day/month/year) 27 November 1998 (27.11.98)
International Patent Classification (IPC) or national classification and IPC H01R 39/04, 39/06, 43/06		
Applicant KIRKWOOD INDUSTRIES GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 26 June 2000 (26.06.00)	Date of completion of this report 27 February 2001 (27.02.2001)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP99/09061

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages \_\_\_\_\_ 1, 3-14 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_ 2, 2a \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 08 January 2001 (08.01.2001)
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_ 1-9 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 08 January 2001 (08.01.2001)
- ☒ the drawings:  
pages \_\_\_\_\_ 1/4-4/4 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 99/09061

## I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

CONTINUATION OF BOX I, point 5

The present independent process Claim 9 corresponds to the originally submitted Claim 15. However, the originally submitted Claim 15 was dependent on at least the originally submitted Claim 10. The process steps as per the original Claim 10 have been omitted from the present Claim 9. This report has been established as if these process steps were included in Claim 9.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 99/09061

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1-8	YES
	Claims	9	NO
Inventive step (IS)	Claims	1-8	YES
	Claims	9	NO
Industrial applicability (IA)	Claims	1-9	YES
	Claims		NO

## 2. Citations and explanations

## 1. Claim 1:

The closest prior art, **EP-A-0 361 860 (D2)**, discloses the features of the preamble of Claim 1. Only one end section (11) of the commutator of D2 is flat in the bent state, but does not **engage** corresponding receiving means in the front side of the support body.

Figure 23 of **WO-A-95/14319 (D1)** (see passage of the description on page 13, lines 5 ff.) discloses a commutator with a support body and segments comprising interacting means for positioning and aligning the segments. However, the segments do not comprise opposite end sections which are bent to serve as positioning means.

## 2. Claim 5:

**US-A-5 629 576 (D4)** discloses a flat commutator having the features of the preamble of Claim 5.

In D1 (see Fig. 24 and page 13, lines 21 ff.), the segments are positively and frictionally held on the front side of the support body, but no connecting means are arranged between the segments and the support body.

## 3. Claim 9:

See Box I: Claim 9, including the features of the original Claim 10, is not novel over D1.

Claim 26 of D1 discloses a process in which a segmented strip is inserted into the insulating body, and then insulating slits are produced between the segments. All segments are therefore simultaneously supplied to the support body. D1 also describes injection-moulding between the walls of the segment receptacles and anchoring elements (page 2, line 8) and gluing (page 3, paragraph 4). See also D1, page 1, line 1 - page 6, line 8, in particular page 3, lines 23-26, Figures 1-16 and Claim 17.

**US-A-3 819 967 (D5)** also discloses the simultaneous supply of the segments to the support body (see D5, column 3, lines 20-31, and Figures 1-5).

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. **Claim 5** is unclear regarding the interacting means for positioning and aligning the segments (compare with Claim 1).

It should be made clear that the **segments** (104) **are retained** by linking means (105) on **connecting means** (103') arranged between the segments and the support body (103), and that the support body (103) and **the connecting means** (103') on the front side of the support body comprise interacting means for positioning and aligning the segments (104) in relation to the support body (103).

See the following pages of the description of the application: page 3, lines 26-28; page 5, lines 19-21; page 11, lines 21-25; and page 12, lines 3-6.

2. The embodiment in the lower half of Figure 1, not only the embodiments in the top half of Figure 1 and Figure 2, is not covered by the scope of protection of **Claim 1**; see, in particular, page 9, lines 20-28, of the description. These embodiments do not comprise opposite end sections which engage receiving means in the front side of the support body.

The embodiment depicted in Figure 4 is not covered by the scope of protection of **Claim 5**; see page 12, lines 17-26, of the description.

The embodiment in the right-hand side of Figure 7 is



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 99/09061

VIII. Certain observations on the international application

not covered by the scope of protection of **Claim 1**  
because the positioning means (309, 309') are not  
flat in the bent state.

**PATENT COOPERATION TREATY**  
**PCT**

[Stamp: Received FEBRUARY 28, 2001]

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 10dwk/128533	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP99/09061	International filing date (month/day/year) 11/24/1999	Priority date (month/day/year)  11/27/1998
International Patent Classification (IPC) or national classification and IPC H01R39/04		
Applicant KIRKWOOD INDUSTRIES GMBH et al.		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																								
2.	This REPORT consists of a total of 5 sheets, including this cover sheet.  <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of 16 sheets.																								
3.	This report contains indications relating to the following items:  <table style="width: 100%; border: none;"> <tr> <td style="width: 5%;">I.</td> <td style="width: 5%;"><input checked="" type="checkbox"/></td> <td>Basis of the report</td> </tr> <tr> <td>II.</td> <td><input type="checkbox"/></td> <td>Priority</td> </tr> <tr> <td>III.</td> <td><input type="checkbox"/></td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV.</td> <td><input type="checkbox"/></td> <td>Lack of unity of invention</td> </tr> <tr> <td>V.</td> <td><input checked="" type="checkbox"/></td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI.</td> <td><input type="checkbox"/></td> <td>Certain documents cited</td> </tr> <tr> <td>VII.</td> <td><input type="checkbox"/></td> <td>Certain defects in the international application</td> </tr> <tr> <td>VIII.</td> <td><input checked="" type="checkbox"/></td> <td>Certain observations on the international application</td> </tr> </table>	I.	<input checked="" type="checkbox"/>	Basis of the report	II.	<input type="checkbox"/>	Priority	III.	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV.	<input type="checkbox"/>	Lack of unity of invention	V.	<input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI.	<input type="checkbox"/>	Certain documents cited	VII.	<input type="checkbox"/>	Certain defects in the international application	VIII.	<input checked="" type="checkbox"/>	Certain observations on the international application
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VII.	<input type="checkbox"/>	Certain defects in the international application																							
VIII.	<input checked="" type="checkbox"/>	Certain observations on the international application																							

Date of submission of the demand  06/26/2000	Date of completion of this report  02/27/2001
Name and mailing address of the IPEA European Patent Office • P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk • The Netherlands Telephone: +31 70 340 -2040 Tx: 31 651 epo nl Facsimile: + 31 70 340 -3016	Authorized Officer  E. Schaap  Telephone: +31 70 340 4269  <div style="text-align: right;">[Seal: European Patent Office]</div>

**PRELIMINARY INTERNATIONAL  
EXAMINATION REPORT**

International File Number PCT/EP99/09061

**I. Basis of the report**

1. This report was issued based on *(replacement sheets, which were submitted upon request pursuant to Article 14 to the application office, within the scope of this report are considered as "originally filed" and are not attached because they do not contain amendments.)*:

**Description, pages:**

1,3-14	original version			
2,2a	received on	01/09/2001	with the letter of	01/08/2001

**Patent claims, No.:**

1-9	received on	09/01/2001	with the letter of	01/08/2001
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**Drawings, sheets:**

1/4-4/4	original version
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ Contained in the international application in printed form.
- ☐ Filed together with the international application in computer readable form.
- ☐ Furnished subsequently to this Authority in written form.
- ☐ Furnished subsequently to this authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**PRELIMINARY INTERNATIONAL  
EXAMINATION REPORT**

International File Number PCT/EP99/09061

4. The amendments have resulted in the cancellation of:

- ☐ the description,                      pages
- ☐ the claims,                              Nos.
- ☐ the drawings,                          sheet:

5. ☒ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

*(Replacement sheets, which contain such amendments must be indicated under Item 1 and must be appended to this Report.)*

**See Supplementary Sheet**

6. Additional observations, if any

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes:	Claims 1-8
	No:	Claims 9
Inventive step (ET)	Yes:	Claims 1-8
	No:	Claims 9
Industrial Applicability (GA)	Yes:	Claims 1 - 9
	No:	Claims

2. Citations and explanations  
**See Supplementary Sheet**

**VIII. Certain observations on the international application**

The following observations are provided on the accuracy of the patent claims, the description and drawings and on the question on whether the claims are supported to the fullest extent by the description:

**See Supplementary Sheet**

**I. Basis of the Report**

Independent process claim 9 corresponds to Claim 15 originally submitted. However, this Claim 15 is a claim which is dependent at least on originally submitted claim 10. The process steps of the original Claim 10 are omitted from Claim 9. This report has been prepared on the assumption that these process steps have been incorporated in claim 9.

**V. Reasoned Statement**

**1. Claim 1:**

The proximate state of the art, **EP-A-0 361 860 (D2)** discloses the characteristics of the preamble of Claim 1. Only one end section (11) of the commutator of D2 is planar when bent, and this end section is not engaged in corresponding receiving means on the front of the outer cover.

Figure 23 in **W095/14319 (D1)** (see descriptive portion, p. 13, ll. 5 et seq) discloses a commutator with an outer cover and segments having interactive means for positioning and orienting the segments. However, the segments have end sections opposite each other as positioning means which are bent.

**2. Claim 5:**

**US-5 629 576 (D4)** discloses a planar commutator with the characteristics specified in the preamble of Claim 5.

In D1 (see Figure 24 and p. 13, ll. 21 et seq) no connection means is mounted between the segments and the outer cover where the segments are fastened by form locking or force locking.

3. Claim 9:

See first paragraph above: Claim 9, including the characteristics of original claim 10, is not novel with respect to D1:

Claim 26 of D1 discloses a process in which a segment strip is inserted into the insulating material, after which insulation slots are prepared between the segments: as a result, all segments are delivered to the outer cover simultaneously. D1 also specifies injection between the partitions of the segment receiving means and anchoring elements (see p. 2, l. 8), as well as a process of adhesion. See also D1, p. 1, l. 1 to p. 6, l. 8, in particular p. 3, ll. 23-26, Figures 1-16, and claim 17.

**US-A-3 819 965 (D5)** also discloses simultaneous delivery of the segments to the outer cover: see D5, column 3, ll. 20-31, and Figures 1-5.

VIII. Certain observations, PCT Article 6

1. **Claim 5** is vague as regards the interacting means of positioning and orienting the segments (cf. claim 1): It should be made clear that the **segments (104)** are **fastened on connection means (103')** between the segments and the outer cover (103) by bonding means (105), and that the outer cover (103) and the **connection means (103')** have on the front of the outer cover interacting means for positioning and orienting the segments (104) with respect to the outer cover (103).

Consult the following pages in the descriptive portion of the application: p. 3, ll. 26-28, p. 5, ll. 19-21, p. 11, pp. 21-25, and p. 12, ll. 3-6.

2. Both the embodiment presented in the upper half of Figure 1 and that in Figure 2 and the embodiment illustrated in the lower half of Figure 1 fail to fall within the scope of **Claim 1**; see in particular the descriptive portion p. 9, ll. 20-28. These embodiments do not show end sections opposite each other which are engaged in the receiving means on the front of the outer cover.

**PRELIMINARY INTERNATIONAL  
EXAMINATION REPORT**

International File Number PCT/EP99/09061

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The embodiment in Figure 4 does not fall within the scope of **Claim 5**; see the descriptive portion, p. 12, ll. 17-26.

The embodiment in the right half of Figure 7 does not fall within the scope of **Claim 1**, in that the positioning means (309, 309') are not planar when in the bent state.

[2]

... and then sprayed with molded plastic material to form the outer cover. These operations are followed by additional machining and testing steps carried out to comply with the requirements set for accuracy of the geometric dimensions of the commutator and for the stability of the latter.

DE-OS-2 352 155 discloses a commutator for a miniature electric motor and a process for manufacture of this motor in which a desired number of commutator plates are fastened on a jacket surface of a core in specific sectors by means of an adhesive.

WO 95/14319 discloses a commutator and a process for its manufacture in which the segmented receiving means are undersized and the insulating elements and/or the segments have an elasticity such that the segments inserted into the segment receiving means are fastened both by form locking and by force locking. In addition, the segments may be caulked or cemented to the outer cover.

US 3,819,967 shows a drum commutator in which the commutator segments are fastened to the cylindrical outer cover by cementing.

EP 0 361 860 A 2 discloses a commutator in which the segments are fastened on the outer cover with an adhesive layer inserted between them. In addition, the segments are bent, at least on one end, to form a clasp so that the segments are engaged in an incision in the outer cover which recedes radially from the circumferential surface of the outer cover and extends axially.



2a

The metal segments are oxidized on the surface of their interior narrow side and then bonded to the ceramic body by being heated to the temperature required for production of a eutectic.

US 5,629, 576 discloses a planar commutator with commutator segments containing carbon which are fastened to connection means of copper by means of an adhesive bonding agent. A segment is oriented toward connection means by way of a recess in the segment containing carbon into which the bonding agent is also introduced.

State-of-the-art commutators require a large number of production and testing steps in order to make it possible to guarantee the required degrees of accuracy and reliability.

Hence it is the object of the invention to develop a commutator which exhibits high accuracy with respect to its geometric dimensions and high long-term stability and is also simple to manufacture.

The object is attained by means of the device and process disclosed in the independent claims. Special embodiments of the invention are disclosed in the subsidiary claims.

The segments may be fastened on the outer cover by fastening means mounted more or less between the outer cover and the segments. The outer cover is generally made from an electrically insulating material, in particular of a plastic such as a duroplastic, a thermoplastic, or ...

[end of text, page 2a]